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PTO/SB/21 (09-04) Approved for use through 07/31/2006. U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE erwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number MOEMARY **Application Number** 10/707,447 TRANSMITTAL Filing Date December 15, 2003 **FORM** First Named Inventor Sugar et al. Art Unit 2681 **Examiner Name** Not Yet Known (to be used for all correspondence after initial filing) Attorney Docket Number COG-2-0978.01.US Total Number of Pages in This Submission **ENCLOSURES** (Check all that apply) After Allowance Communication to TC Fee Transmittal Form Drawing(s) Appeal Communication to Board Licensing-related Papers Fee Attached of Appeals and Interferences Appeal Communication to TC Petition Amendment/Reply (Appeal Notice, Brief, Reply Brief) Petition to Convert to a Proprietary Information After Final **Provisional Application** Power of Attorney, Revocation Status Letter Affidavits/declaration(s) Change of Correspondence Address Other Enclosure(s) (please Identify Terminal Disclaimer Extension of Time Request below): Statement Under 37 CFR 3.73 Request for Refund **Express Abandonment Request** (b) and Copy of Assignment CD, Number of CD(s) Information Disclosure Statement Landscape Table on CD Certified Copy of Priority Remarks Document(s) Reply to Missing Parts/ Incomplete Application Reply to Missing Parts under 37 CFR 1.52 or 1.53 SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT Firm Name VOLPE AND KOENIG, P.C. Signature Printed name Anthony L. Venezia Date Reg. No. 4-10-200 48.382 CERTIFICATE OF TRANSMISSION/MAILING I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below: Signature Date Typed or printed name Anthony L. Venezia This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to

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STATEM	MENT UNDER 37 CFR 3.73(b)
Applicant/Patent Owner: IPR Licensing, Inc.	
Application No./Patent No.: 10/707,447	Filed/Issue Date: December 15, 2003
Entitled: SIGNAL INTERFACING TECHNIQUES	TO SIMPLIFY INTEGRATED CIRCUIT RADIO DESIGNS
IPR Licensing, Inc.	, a Corporation
(Name of Assignee)	(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)
states that it is: 1. ☑ the assignee of the entire right, title, and inter	rest; or
2. an assignee of less than the entire right, title The extent (by percentage) of its ownership in the patent application/patent identified above by	nterest is ———— %
A. [] An assignment from the inventor(s) of the pa in the United States Patent and Trademark O attached.	tent application/patent identified above. The assignment was recorded ffice at Reel, Frame, or for which a copy thereof is
OR	
below:	ent application/patent identified above, to the current assignee as shown
	To:
	nited States Patent and Trademark Office at, or for which a copy thereof is attached.
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3. From:	To:
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[] Additional documents in the chain of ti	itle are listed on a supplemental sheet.
[X] Copies of assignments or other documents in the [NOTE: A separate copy (i.e., the original assignment be submitted to Assignment Division in accorded in the records of the USPTO. See MF	nment document or a true copy of the original document) coordance with 37 CFR Part 3, if the assignment is to be
The undersigned (whose title is supplied below) is a	authorized to act on behalf of the assignee.
4-6-2005	Anthony L. Venezia
Date	Typed or printed name
215-568-6400	car
Telephone number	Signature
	Patent Agent
	Title

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Officer, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

ASSIGNMENT

WHEREAS, Cognio, Inc. ("Assignor"), a Delaware corporation having a mailing address of 20400 Observation Drive, Suite 206, Germantown, Maryland 20876 is the owner of the entire right, title, and interest in and to the patent properties listed in Schedule A except to the extent set forth in Paragraph 2 "Limitation" of Schedule B (the "Identified IPR") and the know-how, copyrights and other intellectual property rights listed on Schedule B ("the IPR Blocks"); and

WHEREAS, IPR Licensing Inc., a Delaware corporation having a mailing address of Suite 105, Hagley Building, 3411 Silverside Road, Concord Plaza, Wilmington, Delaware 19810 and a wholly owned subsidiary of InterDigital Communications Corporation ("Assignee") is desirous of acquiring the entire right, title, and interest in and to the Identified IPR and IPR Blocks and the additional patent properties identified below (all of said Identified IPR, IPR Blocks, and patent properties being referred to herein as the "Assigned IPR Assets").

NOW, THEREFORE, Assignor, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, does hereby SELL, ASSIGN, and CONVEY unto Assignee all right, title, and interest throughout the world in and to:

- 1. The Identified IPR and the IPR Blocks:
- 2. All inventions disclosed by the Identified IPR and the IPR Blocks;
- All patents and like protection that have now been or may in the future be granted and that claim the inventions disclosed by the Identified IPR and

- the IPR Blocks, whether in the United States of America or in any other country or place anywhere in the world;
- 4. All Patent Families (as defined in Schedule B hereto) of the Identified IPR and like grants, including without limitation, those obtained or permissible under past, present, and future law or statutes;
- 5. The right to Assignee to file in its name applications for patents and like protection for said Identified IPR and IPR Blocks in any country or countries foreign to the United States;
- 6. All international rights or priority associated with said Identified IPR (said Identified IPR, IPR Blocks and any and all rights, including patents and patent applications, covered by Items No. 2-6 hereof collectively referred to herein as the "Assigned IPR Assets");
- 7. All rights of action on account of past, present, and future unauthorized use of said Assigned IPR Assets and for infringement of said Assigned IPR Assets and like protection; and
- 8. All past, present, and future rights of recovery for unauthorized use of said Assigned IPR Assets under any provisional rights or like protection:

The U.S. Commissioner of Patents and Trademarks and any and all similarly situated officials in other countries are hereby requested to issue Letters Patent in accordance with this Assignment.

GENERAL

Assignee hereby accepts the foregoing assignment but shall not assume
 any liabilities, debts and obligations associated with the Assigned IPR

- Assets, except for obligations for fees to maintain registrations or continue to prosecute the Identified IPR:
- Assignor shall cooperate with Assignee, at Assignee's sole expense, in any action Assignee reasonably requests that Assignor take in order to effectuate, carry out, or fulfill the parties' intent and/or Assignor's obligations hereunder, including, without limitation, the execution of any instruments and papers that are necessary or desirable, in Assignee's sole discretion, to consolidate, confirm, vest and/or record Assignee's full and complete ownership of the Assigned IPR Assets with, for example, the U.S. Patent and Trademark Office or equivalent foreign offices;
- 3. This Assignment shall inure to the benefit of Assignee and its successors and assigns and shall be binding upon Assignor and its successors and assigns;
- 4. This Assignment and all questions relating to its validity, interpretation, performance and enforcement shall be governed by and construed in accordance with the laws of the State of Delaware;
- 5. This Assignment and the Purchase Agreement between Assignee and Assignor dated March 9, 2005 contain the entire agreement and understanding of the parties relating to the subject matter hereof, and merge and supersede all the parties relating to the subject matter hereof. This Assignment may not be changed or modified, except by an agreement in writing signed by each of the parties; and
- 6. This Assignment may be executed by facsimile and in counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by their duly authorized representatives and Assignor has delivered this instrument to Assignee effective the 9th day of March, 2005.

ASIGNOR: Cognio, Inc.	1
Today's Date: March 9, 2005	By: HMM
State of Maryland	Title: President
County of <u>Frederick</u> On <u>Marcin 9.3005</u> before me, <u>Separation McPherson</u> the basis of satisfactory evidence to be the p	, personally known or proved to me on
within instrument and acknowledged to me tauthorized capacity and that by his/her signal entity upon behalf of which the person acted	that he/she is executed the same in his/her ature on the instrument the person, or the
Witness my hand and official seal. Soron Bennett NOTARY PUBLIC Frederick COUNTY MARYLAND My Commission Expires June 28, 2006	Notary Public
ASSIGNEE: IPR Licensing Inc.	Caul 1
Today's Date: March 14, 2005	Title: Viu President
County of New Castle On March 14, Zac5 before me, Castle personally appeared Robinsh the basis of satisfactory evidence to be the within instrument and acknowledged to me authorized capacity and that by his/her signs entity upon behalf of which the person acted Witness my hand and official seal.	SS.: Notary Public, Notary P
	file of the

Schedule A - Identified IPR

CATHERINE E. SINKEWICZ NOTARY PUBLIC STATE OF DELAWARE My Commission Expires Oct. 3, 2007

Matter	Title	Filing Date	Serial Number	Country of Filing	Patent Number
Cognio77/US	A Tunable Upconverter, Mixer With Image Rejection	01/20/2003	0/248/432	United States of America	
Cognio7//PCT	.A. Tunable Upconvener Mixer With Image Rejection	01/4/2004	PCT/USO4/00915	WIPO	
Cognio83US	Compensation Techniques for Group Delay Effects in Transmit Beamforming Radio Communication	02/13/2004	10/779,269	United States of America	
Cognio83PCT	Compensation Techniques for Group Delay Effects in Transmit Beamforming	06/01/2004	PCT/US04/17268	WIPO	
Cognio21PCT	Limproving the Efficiency of Power Amplities in Devices Using Transmit Beamforming	03/131/2003	PCTIUS0307561	WPO	
Cognio21US	ilmproving the Effidency of Power. Amplifiers in Devices Using Transmill Beamforning	03/13/2003	.0249'063 • 104 144	United States of America	
Cognic21US2	Improving the Efficiency of Power Amplifiers in Covices Using, UT Transmit Beamforming	106/44/2004	10/867-249	United States of C America	
Cognio99US	Master-Slave Local Oscillator Porting Between Radio Integrated Circuits	12/04/2003	10/707,312	United States of America	
Cognio50CN	Multiple Input Multiple:Output MIMO Radio Transceiver	12/14/2004	103809045.77	China)	
Cognio50US	Multiple Input Multiple Output Radio Irransceive	10/i172002	07065 388, 1	United States of Americal	6728 517 B2
Cognib507W	Avulupie inputiviuliale sorput Radioviransceiver i Mari	0.9/21/2003 1 0.9/21/2003 1 0.9/21/2003 1	92,108232	nalwani	
Cognip50PCT	Luquegraquillon de la que la companie de la que la companie de la	04/21/2003	PG 7/US03/n2183 (WPO TO	
Cognio50EP	Multiple input Multiple Output Radio Transceiver	04/21/2003	03726362d	European Windon	
Cognid50US2	Multiple Input MultiplesOttput Radio:Transceiver	01/08/2004	G0/70/-744	United States of America	
Cognio97US	Signal Interfacing Techniques To Simplify Integrated Circuit Radio Designs	12/15/2003	10/707,447	United States of America	

Cognio97PCT	Signal Interfacing Techniques to Simplify Integrated Circuit Radio Designs	05/14/2004	PCT/US04/15339	· ·WIPO.	
A2.840.5	System and Meuroc for Antenna Diversity Using Equal Power Dolnt Maximal Rato Combining	06/19/2002	10 774689	Unled States of America 4	6,785,520 B2 c
CognickOTAW 3	System and Maunog for Artienna Diversity Using Equal Rower Joint Maximal Rate Combining	02/26/2003	92/104066	in the second se	
(Cognic40PCT	System and Method/for Antenna System and Method/for Antenna Diversity Using Equal Power Joint Maximal Railo Combining	02/28/2003	(PC1/03/05644	WIPO	
Cognie40US2	System and Method for Antennal Individual Power (1)	103/45/2004	10/800/610AL4218	Suning States of America	
.Aryya18US	System and Method for Antenna Diversity Using Joint Maximal Ratio Combining	06/19/2002	10/174,728	United States of America	6,687,492 B2
Cognio18TW	System and Method for Antenna Diversity Using Joint Maximal Ratio Combining	02/26/2003	92104059	Taiwan	224405
Cognio18PCT	System and Method for Antenna Diversity Using Joint Maximal Ratio Combining	02/26/2003	PCT/03/05642	WIPO	
Cognio18US2	System and Method for Antenna Diversity Using Joint Maximal Ratio Combining	10/28/2003	10/695,229	United States of America	
Cognid38US	System: and: Mathod for John Maximal Railo Combining Using Time: Domain Based Signal Processing D.	07/18/2002	70/064/882* 110/064/882*	United States of 12, 22, 24, 24, 24, 24, 24, 24, 24, 24, 2	
Cognida IV.	System and Method for Joint A Makimal Ratlo Combining Using Lines Comain Signal Processing	02/26/2003/	92.104060 Lds	Talvanen	1226765
(Cognio38PCT	System and Metrodier John	10722872018B	Ferriorist 1/4	WIPOLINI	
Cognia38VS2	Systemand Mathod on Joint Maximal Ratio Gombing Using In the Domain Based Signa Processing	12/23/2003 - 12/23/2003	107707688 V	United States of Paragraphica	
Cógnio29PCT	System and Method for Multiple- input Multiple Output (MIMO) Radio Communication	07/25/2003	PCT/US03/23408	:WIPO	
Cognio29US	System and Method for Multiple- Input Multiple-Output (MIMO) Radio Communication	07/25/2003	10/627;537	United States of America	
Cognio29US2	System and Method for Transmit Weight Computation for Vector Beamforming Radio Communication	02/13/2004	10/779,268	United States of America	
Aryya23US	Systems and Methods for Improving Range for Multicast Wireless Communication	و 19/2002	10/174/690	United States of Americal	

Cognio23ifW	Systems and Wetneds for improving Renge to Multicast Wireless Communication	102/26/2003	92104064	Tawan	
Cognic23RCT	Systems and Methods for Improving Range for Multicast I Wireless Communication	02/26/2003	RCII/03/05646	Wino Wino Wino Wino Wino Wino Wino Wino	
	Systems and Methods for Information Religious Municipal Religious Municipal Religious	\$05 <i>/27/2</i> 004	10/855/279). (5)	United States of America	
Cognio52US	Techniques for Correcting for Phase and Amplitude Offsets in a MIMO Radio Device	06/09/2003	10/457,293	United States of America	
Cognio52PCT	Techniques for Correcting for Phase and Amplitude Offsets in a MIMO Radio Device	09/09/2003	PCT/US03/28126	. WIPO	
Cognio52US2	Techniques for Correcting for Phase and Amplitude Offsets in a MIMO Radio	06/02/2004	10/859,255	United States of America	
Cognio 102US	Variable Gain Amplifier with Low Phase Variation	.01/A2/2005	11/034/224	United States of PAmerica	
Cognio57US	Voltage-Controlled Oscillator with Automatic Amplitude Control Circuit	11/13/2002	10/065,719	United States of America	6,700,450 B2
Cognio8US	Improving Throughput in Multi- Rate Wirelass Networks Using Variable Length Packets and Other Techniques	10/24/2002	10/065/4941.4	United States of Americants	

Matter	Title	Filing Date	Serial Number
30014380.0008	Improving Throughput in Multi-Rate Wireless Networks Using Variable-Length Packets and Other Techniques	10/30/2001	60/330,755
Aryya18Prov	Antenna Diversity Scheme Using Joint Maximal Ratio Combining	03/01/2002	60/361,055
30014380.0021	Improving Efficiency of Power Amplifiers for WLAN Terminals Using Transmit Beamforming	03/21/2002	60/365,811
30014380.0022	Method for Maintaining Channel State Information at the Transmitter to Improve Link Quality in Multi-User WLAN Radio Systems	03/21/2002	60/365,775
30014380.0020	Improving Range and Throughput of Wireless LANs in Frequency Selective Fading Environments	03/21/2002	60/365,797
30014380,0023	Techniques for Improving Range in Composite Beamforming- Enhanced 802.11x Networks	03/21/2002	60/365,774

Árýya31Prôv	System and Architecture for Wireless Transceiver Employing Composite Beamforming and Spectrum Management Techniques	04/22/2002	60/374,531
Aryÿa39Prov	Reducing Cost of a Half-Duplex Transceiver Integrated Circuit By Sharing a Single Filter for Receive and Transmit Operations	04/29/2002	60/376,722
-Aryya40Prov	Antenna Diversity Scheme Using Equal Gain Composite Beamforming	05/06/2002	60/380,139
Aryya53Prov	System and Method for Sharing an ADC and a DAC in a Half- Duplex Radio Transcelver	06/21/2002	60/319,336
Cognio44Prov	Half-Duplex Radio Transceiver Supporting Dual Band and Scalable Multi-Channel Operations	06/27/2002	60/319,360
Cognio57Prov	Voltage-Controlled Oscillator with Automatic Amplitude Control Circuit	07/29/2002	60/319,430
Cognio29Prov	System and Method for Vectorized Data Transmission Between Communication Devices	07/30/2002	60/319,437
Cognio50Prov	Radio Transceiver Having Multiple Integrated Receive and Transmit Paths and a Wideband Operation Mode	07/30/2002	60/319,434
Cognio52Prov	Techniques for Correcting Phase Mismatch in MIMO Radio Transceivers	09/10/2002	60/409,677
Cognio29Prov2	System and Method for Equal Power Vectorized Data Communication	04/10/2003	60/461,672
Cognio83Prov	Synchronization Algorithm to Compensate for Group Delay Effects on Transmit Beamforming	06/09/2003	60/476,982
Cognio29Prov3	System and Method for Vectorized Radio Communication	06/19/2003	60/479;945
Cognio97Prov	Signal Multiplexing Techniques to Simplify Integrated Radio Circuit Design	07/25/2003	60/481,139
Cognio99Prav	Master-Slave Local Oscillator Porting Technique Between Multiple Integrated Circuits	09/19/2003	60/481,399
Cognio29Prov4	System and Method for Transmit Weight Computation for Multiple-Input Multiple-Output (MIMO) Radio Communication	10/15/2003	60/511,530
Cognia102Prov	Variable Gain Amplifier With Low Phase Variation	01/28/2004	60/539,643
Cognio97Prov2	Sharing a Connection Pin on a Radio Integrated Circuit for Transmit and Receive Signals	02/02/2004	60/481,995

Cognio73Prov	Interface Between MIMO Radio Chip and Baseband Chip	05/30/2003	60/474494
Aryya45Prov	RF Amplifier with Blas Boosting Scheme Using a Voltage Divider	05/30/2002	60/319,275
Aryya48Prov	RF Amplifier with a Self-Bias Boosting Scheme Using PNP Transistors	06/21/2002	60/319,335
Aryýa47Prov	Blas Boosting Schemes for Cascode-Configured RF Transistors	06/21/2002	60/319;334
Aryya56Prov	RF Amplifier with a Blas Boosting Scheme for a Complementary Push-Pull Configuration	06/21/2002	60/319,337
Cognlo66Prov	Self-Bias Boosting Schemes for a Differential RF Amplifier	10/18/2002	06/319,629
Cognio72Prov	RF Amplifier with a Stable Bias Boosting Scheme	11/06/2002	06/319,672
Cognio55Prov	Method of Testing the Divider Circultry of an Integrated Integer-N Style PLL or Fractional-N Style PLL	06/27/2002	60/319.361
Cognio62Prov	Frequency Synthesizer for Multi-Band Super-Heterodyne Transceiver Applications	09/04/2002	60/319,518
Cognio110Prov	A 5GHz Direct Conversion Receiver with DC Offset Correction (Published May, 2004, International Symposium on Circuits and Systems, pp. IV, 269-272)	10/07/2003	60/509,286
Cognio79Prov	A Fully Integrated Power Detector	09/04/2003	60/481,327

Schedule B - IPR Blocks

- 1) IPR BLOCKS ASSIGNED: Any and all know-how, copyrights and other intellectual property rights related to the Identified IPR set forth on Schedule A hereto (except to the extent set forth in Paragraph 2 below) and the FPGA Development Platforms, but excluding trademarks and the Excluded IPR Blocks.
- 2) LIMITATION: US provisional patent applications identified as Aryya31Prov (Serial No. 60/374,531) and Cognio73Prov (Serial No. 60/474494) each contain information related to the Excluded IPR Blocks, and that, notwithstanding anything to the contrary in this Agreement, Assignee's rights related to such applications extend only to support the priority date for US Patent Number 6,728,517 (with respect to Aryya31Prov) and US Serial No. 10/707, 447 and PCT Serial No. PCT/USO4/15339 (with respect to Cognio73Prov), all of which are part of the Identified IPR. Except for this patent and these non-provisional patent applications (and their divisionals, continuations, continuations in part, reissues, reexaminations, and foreign equivalents), no other Patent Families associated with such provisional applications are transferred under this Agreement.
- 3) NO ASSIGNMENT: No rights are being assigned to the Excluded IPR Blocks.

4) DEFINITIONS:

"Excluded IPR Blocks" means any and all patents, know-how, copyrights and other intellectual property rights related to Seller's ongoing spectrum analysis/management business. Notwithstanding anything to the contrary contained in this Agreement (with the exception of paragraph 2 "Limitation" of this Schedule B above), the Identified IPR shall not be considered part of the Excluded IPR Blocks.

"FPGA Development Platforms" means two MIMO technology development boards, one that receives and the other that transmits, with FPGA Xilinx programmable chips which together form a 4x4 configuration.

"IPR Blocks" means any and all know-how, copyrights and other intellectual property rights related to the Identified IPR (except to the extent set forth in paragraph 2 "Limitation" of this Schedule B above) and the FPGA Development Platforms, but excluding trademarks, the Identified IPR, and the Excluded IPR Blocks.

"Patent Families" means a patent application or patent and all associated patents and patent applications (including without limitation divisionals, continuations, continuations in part, reissues, reexaminations, and foreign equivalents thereof), if any, that share any common priority date or identical specification. In the case of continuations in part that include new matter, the new matter shall be considered part of the same Patent Family as the matter bearing the same priority date or identical specification.

APR 1 1 2005 19

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37 CFR	I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(b).						
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Assignee N	lame and Address:						
IPR Licer	nsing, Inc.						
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A copy or	this form, together with a statement unit has application in which this form is us	nder 37 CF ad The st	R 3.73(b)	(Form PTO/SB/96	or equi	valent) is req	uired to be
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Signature	((My))					mar 24	205
Name	Donald M. Boles					610-878-78	
Title	Vice President-Intellectual Property 8	Chief Pa	ent Coun		- Copriorio	010-076-76	-
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